**A. BASIC SCIENCES**

**Theoretical**

| | | | | |
|---|---|---|---|---|
| * | Phy 101 | Physical Optics, Heat, Waves and Oscillation | 3 credits | |
| | Phy 105 | Structure of Matter, Electricity and Magnetism and Modern Physics | 3 credits | ***Prereq.*** Phy 101 |
| * | Chem 103 | Chemistry I | 3 credits | |
| | Chem 105 | Chemistry II | 3 credits | ***Prereq.***Chem103 |

**Sessional**

| | | | |
|---|---|---|---|
| * | Phy 102 | Physics Lab. | 1.5 credits |
| * | Chem 114 | Inorganic Quantitative Analysis (Sessional) | 1.5 credits |

**Requirement 12 credits (9+3)**

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* Subjects marked with asterisk(*) indicate compulsory courses

## B. MATHEMATICS

**Theoretical**:

| | | | | |
|---|---|---|---|---|
| * | Math 131 | Mathematics I | 3 credits | |
| * | Math 133 | Mathematics II | 3 credits | |
| | Math 231 | Differential Equations | 3 credits | |
| | Math 233 | Fourier Analysis, Harmonic Functions and Laplace Transform | 3 credits | |
| | Math 235 | Vector Analysis and | 3 credits | Statistics |

**Requirement 12 Credits (12+0)**

## C. HUMANITIES

**Theoretical**:

| | | | | |
|---|---|---|---|---|
| * | Hum 111 | English | 2 credits | |
| * | Hum 113 | Economics | 2 credits | |
| | Hum 207 | Advanced English | 2 credits | ***Prereq.***Hum 111 |
| | Hum 211 | Sociology | 2 credits | |
| | Hum 213 | Government | 2 credits | |
| | Hum 313 | Principles of Accounting | 2 credits | |

**Requirement 8 Credits ( 8+0)**

## D. ENGINEERING (BASIC)

**Theoretical:**

| | | | | |
|---|---|---|---|---|
| * | CE 101 | Engineering Mechanics | 4 credits | |
| * | CE 103 | Surveying | 4 credits | |
| * | EEE 165 | Basic Electrical Technology | 4 credits | |
| * | CE 201 | Engineering Materials | 4 credits | |
| * | CE 203 | Engineeringg Geology and Geomorphology | 3 credits | |

| | | | | |
|---|---|---|---|---|
| * CE | 205 | Numerical Methods and Computer Programming | 3 credits | |
| * CE | 211 | Mechanics of Solids I | 3 | credits |
| | ***Prereq.*** CE 101 | | | |
| * CE | 213 | Mechanics of Solids II | 3 | credits |
| | ***Prereq.*** CE 211 | | | |
| * WRE | 201 | Fluid Mechanics | 4 credits | |

**Sessional**:

| | | | |
|---|---|---|---|
| * CE | 100 | Civil Engg. Drawing I | 1.5 credits |
| * CE | 102 | Civil Engg. Drawing II | 1.5 credits |
| * CE | 104 | Practical Surveying (3 weeks in field) | 1.5 credits |
| * Shop | 132 | Carpentry Shop, Machine Shop and Welding Shop Sessional | 1.5 credits |
| * EEE | 166 | Basic Electrical Technology Laboratory | 1.5 credits |
| * CE | 200 | Details of Construction | 1.5 credits |
| * CE | 202 | Materials Sessional | 1.5 credits |
| * CE | 206 | Computer Programming | 1.5 credits |
| * CE | 208 | Quantity Surveying | 1.5 credits |
| * CE | 212 | Structural Mechanics and Materials Sessional | 1.5 credits |
| * WRE | 202 | Fluid Mechanics Sessional | 1.5 credits |

**Requirement 48.5 Credits (32+16.5)**

## E. CIVIL ENGINEERING PRACTICE

**Theoretical:**

| | | | |
|---|---|---|---|
| * CE | 401 | Project Planning & Management | 3 credits |
| CE | 403 | Professional Practices and Communication | 2 credits |
| CE | 405 | Socio-economic Aspects of Development Projects | 2 credits |
| WRE | 403 | Integrated Water Resources Planning & Management | 2 credits |

**Minimum Requirement 5 Credits (5 + 0)**

## F. STRUCTURAL ENGINEERING

**Theoretical:**

| | | | | |
|---|---|---|---|---|
| * CE | 311 | Structural Analysis & Design I | 3 credits | ***Prereq.*** CE 213 |
| * CE | 313 | Structural Analysis & Design II | 3 credits | ***Prereq.*** CE 311 |
| * CE | 315 | Design of Concrete Structures I | 3 credits | |
| * CE | 317 | Design of Concrete Structures II | 4 credits | ***Prereq.*** CE 315 |
| * CE | 411 | Structural Analysis and Design III | 4 credits | ***Prereq.*** CE 313 |
| CE | 413 | Theory of Elasticity and Elastic Instability of | 2 credits | |

Structures
CE 415 Prestressed Concrete 2 credits
CE 417 Design of Steel 2 credits
Structures
CE 419 Introduction to Finite 2 credits
Element Method
CE 421 Dynamics of Structures 2 credits

**Sessional:**
* CE 312 Structural Analysis and 1.5 credits
Design Sessional I
* CE 316 Concrete Structures 1.5 credits
Sessional
CE 400 Project and Thesis 4.5 credits
* CE 412 Structural Analysis and 1.5 credits
Design Sessional II
CE 416 Structural Analysis and 1.5 credits
Design Sessional III

**Minimum Requirement 21.5 Credits (17+4.5)**

## G. ENVIRONMENTAL ENGINEERING

**Theoretical:**
* CE 331 Environmental 3 credits
Engineering I
* CE 333 Environmental 4 credits
Engineering II
CE 431 Environmental 2 credits
Engineering III
CE 433 Environmental 2 credits
Engineering IV
CE 435 Environmental 2 credits
Engineering V

**Sessional** :
* CE 332 Environmental 1.5 credits
Engineering Sessional I
CE 400 Project and Thesis 4.5 credits
CE 432 Environmental 1.5 credits
Engineering. Sessional II

**Minimum Requirement 8.5 Credits (7+1.5)**

## H. GEOTECHNICAL ENGINEERING

**Theoretical :**
* CE 341 Geotechnical 4 credits ***Prereq.*** CE 203
Engineering I
* CE 343 Geotechnical 3 credits
Engineering II
CE 441 Geotechnical 2 credits
Engineering III
CE 443 Geotechnical 2 credits
Engineering IV
CE 445 Geotechnical 2 credits
Engineering V

**Sessional:**

| | | | |
|---|---|---|---|
| * | CE 342 | Geotechnical Engineering Sessional I | 1.5 credits |
| | CE 400 | Project and Thesis | 4.5 credits |
| | CE 442 | Geotechnical Engineering Seasonal II | 1.5 credits |

**Minimum Requirement 8.5 Credits (7 +1.5)**

## I. TRANSPORTATION ENGINEERING

**Theoretical:**

| | | | |
|---|---|---|---|
| * | CE 351 | Transportation Engg. I : Transport & Traffic Design | 3 credits |
| * | CE 353 | Transportation Engg. II : Highway design & Railways | 4 credits |
| | CE 451 | Transportation Engg. III : Traffic Planning & Management | 2 credits |
| | CE 453 | Transportation Engg. IV : Highway Drainage & Airports | 2 credits |
| | CE 455 | Transportation Engg. V : Transport Projects and Operations | 2 credits |

**Sessional:**

| | | | |
|---|---|---|---|
| * | CE 354 | Transportation Engineering Sessional I | 1.5 credits |
| | CE 400 | Project and Thesis | 4.5 credits |
| | CE 452 | Transportation Engineering Sessional II | 1.5 credits |

**Minimum Requirement 8.5 Credits (7+1.5)**

## J. WATER RESOURCES ENGINEERING

**Theoretical:**

| | | | | |
|---|---|---|---|---|
| * | WRE 301 | Open Channel Flow | 4 credits | ***Prereq.*** WRE201 |
| * | WRE 303 | Hydrology | 3 credits | |
| * | WRE 401 | Irrigation and Flood Control | 3 credits | |
| | WRE 405 | Flood Mitigation and Management | 2 credits | |
| | WRE 407 | Ground Water Engineering | 2 credits | |
| | WRE 409 | River Engineering | 2 credits | |
| | WRE 411 | Hydraulic Structures | 2 credits | |
| | WRE 413 | Coastal Engineering | 2 credits | |

**Sessional:**

| | | | |
|---|---|---|---|
| * | WRE 302 | Open Channel Flow Sessional | 1.5 credits |
| | WRE 400 | Project and Thesis | 4.5 credits |
| * | WRE 402 | Irrigation and Flood Control Sessional | 1.5 credits |
| | WRE 412 | Water Resources | 1.5 credits |

Engineering Sessional

**Minimum Requirement 13.0 Credits (10+ 3)**

## 4.3 SUMMARY OF COURSE REQUIREMENTS

| | Courses | Requirements (total credits to be offered) |
|---|---|---|
| A. | Basic Science | 12 (15) |
| B. | Mathematics | 12 (15) |
| C. | Humanities | 8 (12) |
| D. | Engineering (Basic) | 48.5 (48.5) |
| E. | Civil Engineering Practice | 5 (9) |
| F. | Structural Engineering | 21.5 (37.5) |
| G. | Environmental Engineering | 8.5 (20.5) |
| H. | Geotechnical Engineering | 8.5 (20.5) |
| I. | Transportation Engineering | 8.5 (20.5) |
| J. | Water Resources Engineering | 13.0 (29) |
| Total | | 145.5 |
| Project and Thesis | | 4.5 |
| **Optional Courses**:** | | |
| Theory | | 8.0 (38 in F to J, Max. 4 from each division/ WRE Dept.) |
| Sessional | | 3.0 (7.5 in F to J) |
| **Grand Total** | | **161.0** |

** Students specializing in an optional group, such as Structural, Geotechnical, Environmental, Transportation and Water Resources Engineering, shall take thesis and at least two optional courses and a corresponding sessional from that group and two more optional courses and another corresponding sessional from any other group.

## 4.4 COURSES OFFERED IN DIFFERENT TERMS FOR B.Sc.Engg. (CIVIL) DEGREE

| Course No | Name of Course | Credit | Prerequisite Course | Level 1 | | Level 2 | | Level 3 | | Level 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | I | II | I | II | I | II | I | II |
| Phy 101 | Physical Optics, Heat waves and Oscillation | 3 | | ● | | | | | | | |
| Phy 102 | Physics Lab | 1.5 | | ● | | | | | | | |
| Phy 105 | Structure of Matter, Electricity and Magnetism and Modern Physics | 3 | Phy 101 | | ○ | | | | | | |
| Chem 103 | Chemistry I | 3 | | ● | | | | | | | |
| Chem 105 | Chemistry II | 3 | Chem 103 | | ○ | | | | | | |
| Chem 114 | Inorganic Quantitative Analysis | 1.5 | | ● | | | | | | | |
| Math 131 | Mathematics I | 3 | | ● | | | | | | | |
| Math 133 | Mathematics II | 3 | | ■ | ■ | | | | | | |
| Math 231 | Differential Equation | 3 | | | ○ | ○ | | | | | |
| Math 233 | Fourier Analysis, Harmonic Functions and Laplace Transforms | 3 | | | | ○ | ○ | | | | |
| Math 235 | Vector Analysis and Statistics | 3 | | | | | ○ | | | | |
| Hum 111 | English | 2 | | ■ | ■ | | | | | | |
| Hum 113 | Economics | 2 | | ■ | ■ | | | | | | |
| Hum 211 | Sociology | 2 | | | ○ | ○ | | | | | |
| Hum 313 | Principles of Accounting | 2 | | | | ○ | ○ | | | | |
| Hum 207 | Advanced English | 2 | Hum 111 | | | | ○ | | | | |
| Hum 213 | Government | 2 | | | | ○ | ○ | | | | |
| EEE 165 | Basic Electrical Technology | 4 | | | | | | | | | |
| EEE 166 | Basic Electrical Technology Laboratory | 1.5 | | | | | | | | | |
| Shop 132 | Carpentry Shop, Machine Shop and Welding Shop Sessional | 1.5 | | | | | | | | | |
| CE 100 | Civil Engineering Drawing I | 1.5 | | ● | | | | | | | |
| CE 101 | Engineering Mechanics | 4 | | ■ | ■ | | | | | | |
| CE 102 | Civil Engineering Drawing II | 1.5 | | | ● | | | | | | |
| CE 103 | Surveying | 4 | | | ● | | | | | | |
| CE 104 | Practical Surveying | 1.5 | | | | | | | | | |

| Course No | Name of Course | Credit | Prerequisite Course | Level 1 | | Level 2 | | Level 3 | | Level 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | I | II | I | II | I | II | I | II |
| CE 200 | Details of Constructions | 1.5 | | | | ● | | | | | |
| CE 201 | Engineering Materials | 4 | | | | ● | | | | | |
| CE 202 | Materials Sessional | 1.5 | | | | ● | | | | | |
| CE 203 | Engineering Geology and Geomorphology | 3 | | | | ● | | | | | |
| CE 205 | Numerical Methods and Computer Programming | 3 | | | | | ● | | | | |
| CE 206 | Computer Programming Sessional | 1.5 | | | | | ● | | | | |
| CE 208 | Quantity Surveying | 1.5 | | | | | ● | | | | |
| CE 211 | Mechanics of Solids I | 3 | CE 101 | | | ■ | ■ | | | | |
| CE 212 | Structural Mechanics and Materials Sessional | 1.5 | | | | ● | | | | | |
| CE 213 | Mechanics of Solids II | 3 | CE 211 | | | | ● | | | | |
| WRE 201 | Fluid Mechanics | 4 | | | | ■ | ■ | | | | |
| WRE 202 | Fluid Mechanics Sessional | 1.5 | | | | | ● | | | | |
| CE 311 | Structural Analysis and Design I | 3 | CE 213 | | | | | ■ | ■ | | |
| CE 312 | Structural Analysis and Design Sessional I | 1.5 | | | | | | ■ | ■ | | |
| CE 313 | Structural Analysis and Design II | 3 | CE 311 | | | | | | ■ | ■ | |
| CE 315 | Design of Concrete Structures I | 3 | | | | | | ■ | ■ | | |
| CE 316 | Concrete Structures Sessional | 1.5 | | | | | | ■ | ■ | | |
| CE 317 | Design of Concrete Structures II | 4 | CE 315 | | | | | | ■ | ■ | |
| CE 331 | Environmental Engineering I | 3 | | | | | | ■ | ■ | | |
| CE 332 | Environmental Engineering Sessional I | 1.5 | | | | | | ■ | ■ | | |
| CE 333 | Environmental Engineering II | 4 | | | | | | | ■ | ■ | |

| Course No | Name of Course | Credit | Prerequisite Course | Level 1 | | Level 2 | | Level 3 | | Level 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | I | II | I | II | I | II | I | II |
| CE 341 | Geotechnical Engineering I | 4 | CE 203 | | | | | ■ | ■ | | |
| CE 342 | Geotechnical Engineering Sessional I | 1.5 | | | | | | ■ | ■ | | |
| CE 343 | Geotechnical Engineering II | 3 | | | | | | | ■ | ■ | |
| CE 351 | Transportation Engineering I : Transport & Traffic Design | 3 | | | | | | | ■ | ■ | |
| CE 353 | Transportation Engineering II : Highway Design & Railways | 4 | | | | | | | ■ | ■ | |
| CE 354 | Transportation Engineering Sessional I | 1.5 | | | | | | | ■ | ■ | |
| WRE 301 | Open Channel Flow | 4 | WRE 201 | | | | | ■ | ■ | | |
| WRE 302 | Open Channel Flow | 1.5 | | | | | | ■ | ■ | | |
| WRE 303 | Hydrology | 3 | | | | | | ■ | ■ | | |
| CE 400 WRE 400 | Project and Thesis | 4.5 | | | | | | | | ■ | ■ |
| CE 401 | Project Planning and Management | 3 | | | | | | | | ■ | ■ |
| CE 403 | Professional Practices and Communication | 2 | | | | | | | | ■ | ■ |
| CE 405 | Socio-economic Aspects of Development Projects | 2 | | | | | | | | ○ | ○ |
| CE 411 | Structural Analysis and Design III | 4 | CE 313 | | | | | | | ■ | ■ |
| CE 412 | Structural Analysis and Design Sessional II | 1.5 | | | | | | | | ■ | ■ |
| CE 413 | Theory of Elasticity and Elastic Instability of Structures | 2 | | | | | | | | | ○ |
| CE 415 | Prestressed Concrete | 2 | | | | | | | | ○ | ○ |
| CE 416 | Structural Analysis and Design Sessional III | 1.5 | | | | | | | | ○ | ○ |
| CE 417 | Design of Steel Structures | 2 | | | | | | | | ○ | ○ |
| CE 419 | Introduction of Finite Element Method | 2 | | | | | | | | | ○ |
| CE 421 | Dynamics of Structures | 2 | | | | | | | | | ○ |
| CE 431 | Environmental Engineering III | 2 | | | | | | | ○ | ○ | |
| CE 432 | Environmental Engineering Sessional II | 1.5 | | | | | | | | ○ | ○ |

| Course No | Name of Course | Credit | Prerequisite Course | Level 1 | | Level 2 | | Level 3 | | Level 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | I | II | I | II | I | II | I | II |
| CE 433 | Environmental Engineering IV | 2 | | | | | | | | ○ | ○ |
| CE 435 | Environmental Engineering V | 2 | | | | | | | | | ○ |
| CE 441 | Geotechnical Engineering III | 2 | | | | | | | ○ | ○ | |
| CE 442 | Geotechnical Engineering Sessional II | 1.5 | | | | | | | | ○ | |
| CE 443 | Geotechnical Engineering IV | 2 | | | | | | | | ○ | ○ |
| CE 445 | Geotechnical Engineering V | 2 | | | | | | | | | ○ |
| CE 451 | Transportation Engineering III: Traffic Planning & Management | 2 | | | | | | | ○ | ○ | |
| CE 452 | Transportation Engineering Sessional II | 1.5 | | | | | | | | ○ | |
| CE 453 | Transportation Engineering IV : Highway Drainage & Airports | 2 | | | | | | | | ○ | ○ |
| CE 455 | Transportation Engineering V : Transport Projects and Operations | 2 | | | | | | | | | ○ |
| CE 400 / WRE 400 | Project and Thesis | 4.5 | | | | | | | | ■ | ■ |
| WRE 401 | Irrigation and Flood Control | 3 | | | | | | | | ■ | ■ |
| WRE 402 | Irrigation and Flood Control Sessional | 1.5 | | | | | | | | ■ | ■ |
| WRE 403 | Intregated Water Resource Planning and Management | 2 | | | | | | | | ○ | ○ |
| WRE 405 | Flood Mitigation and Management | 2 | | | | | | | | ○ | ○ |
| WRE 407 | Ground Water Engineering | 2 | | | | | | | | | ○ |
| WRE 409 | River Engineering | 2 | | | | | | | | | ○ |
| WRE 411 | Hydraulic Structures | 2 | | | | | | | | | ○ |
| WRE 412 | Water Resources Engineering Sessional | 1.5 | | | | | | | | | ○ |
| WRE 413 | Coastal Engineering | 2 | | | | | | | | | ○ |

Legend

● Compulsory offered in one term only

■ Compulsory offered in one or more terms

○ Optional offered in one or more terms

Sessional / Lab